My House, My Rules: Chinese Aid, Leader Birth Regions, and the Violation of Protected Areas*

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May 19, 2025

Abstract

Existing research highlights that Chinese foreign aid is often vulnerable to elite capture in recipient countries. This study examines whether elite capture negatively impacts environmental protection. Specifically, we investigate the enforcement of protected areas (PAs) and assess the extent to which the placement of Chinese aid projects within PAs is shaped by whether a project benefits local economic interests in a political leader's birth region. We theorize that leaders are more willing violate PAs if the project is placed in their home region than if it is located in a non-home region because the interests that benefit from the aid project in the home region use their new rents to support the incumbent. Analyzing a dataset of 3,675 Chinese infrastructure projects, we find no overall increase in the likelihood of projects infringing on PAs due to a leader's birth region. However, the results reveal significant regional variation. In Africa, projects located in a leader's birth region are approximately 10 percent more likely to encroach on PAs than projects outside of the leader's birth region. Outside Africa, this relationship is reversed, with projects less likely to violate PAs when placed in a leader's home region. Exploratory analyses suggest that domestic public opinion about China and the political salience of ethnicity may explain this regional difference. No such effect exists for World Bank projects.

*We thank Austin Beacham, Quynh Nguyen, Miguel Rueda, Matt Winters for helpful feedback on this project. We are also grateful to audiences at the Environmental Politics and Governance Conference, Midwest Political Science Association, Political Economy of Aid and Development Society, and the University of Bern for their helpful suggestions.

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1 Introduction

A major challenge with foreign aid is the disproportionate influence of elites, i.e., elite capture (e.g., Alesina and Weder, 2002; Andersen et al., 2022; Svensson, 2000). This concern appears to be particularly salient in the context of Chinese foreign aid. Empirical evidence suggests that Chinese aid is more frequently allocated to the birth regions of African leaders (Dreher, Fuchs, Hodler, et al., 2019), increases local corruption (Brazys, Elkink, and Kelly, 2017; Isaksson and Kotsadam, 2018a), and is more likely to fund large-scale prestige projects, such as stadiums, which fail to address the broader population's needs (Strange, 2024).

The susceptibility of Chinese aid to elite capture poses significant challenges for aid effectiveness. Evidence indicates that foreign aid influenced by elite interests may suffer from corruption (Burnside and Dollar, 2000), poor project selection (Dreher, Eichenauer, and Gehring, 2018), and low implementation rates (Williams, 2017). Furthermore, it can exacerbate within-country inequalities through the misallocation of resources to regions favored by elites (Briggs, 2021; Dreher, Fuchs, Parks, et al., 2021).

An additional consequence of elite capture, which has received less attention, is its potential impact on the environment. Conservation and environmental laws rely on effective government enforcement. However, evidence suggests that politicians often interfere with and weaken law enforcement when it serves their personal interests (Holland, 2015; Sun, 2021). Consequently, the prospect of rents from Chinese aid projects may diminish governments' incentives to enforce environmental laws adequately.

The aim of this paper is to investigate the extent to which elite influence contributes to Chinese aid projects harming the environment. Anecdotal evidence suggests that Chinese aid projects are often located within or near environmentally sensitive areas, such as national parks and other protected regions (e.g., Baehr et al., 2023). For example, in Kenya, China financed the 470 km-long Standard Gauge Railway (SGR), connecting Mombasa to Nairobi. The SGR route traverses several national parks, which are designated as protected area (PA). PAs, if their regulations are properly enforced, prohibit most economic activities within their boundaries, including large-scale infrastructure projects (Naughton-Treves et al., 2005). This raises the question of whether such encroachments on PAs are driven by the interests of recipient governments' leaders or by other factors.

If elite influence plays a role in the placement of Chinese aid, we expect that the implementation of a project in a leader's birth region will increase the likelihood of it violating a PA. Leaders face

a cost-benefit trade-off when deciding whether to support a Chinese aid project that compromises the integrity of a PA. On one hand, the aid project can stimulate local economic activity; firms that benefit may in turn reward the incumbent for attracting and implementing the project. On the other hand, the leader faces potential political backlash from local citizens for failing to protect the environment. We argue that a leader is more inclined to support projects that affect PAs if the project benefits the leader's home region. Projects in a leader's home region increase the perceived benefits because the firms in that region are most likely to redirect benefits to support the incumbent regime. Firms in non-home regions are, by contrast, more likely to support a challenger. Therefore, we expect that projects targeting a leader's home region present a more favorable cost-benefit calculation, leading the leader to overlook the violation of PAs.

Using a sample of 3,675 Chinese infrastructure projects from 2000 to 2020, we estimate the effect of a leader's birth region on the probability that a project is located in a PA. While the aggregate estimate is indistinguishable from zero, we discover significant geographic heterogeneity in our results. In the African context, Chinese aid projects placed in birth regions are significantly more likely to violate PAs. In contrast, Chinese aid projects placed outside of Africa are less likely to encroach on PAs when they benefit a leader's birth region. We find no such effect for World Bank projects in infrastructure-intensive sectors.

To uncover the substantive basis for this geographic heterogeneity, we derive additional implications of our theoretical framework. We argue that the costs of violating a PA are lower when ethnicity is politically salient and when citizens view China relatively positively. Consistent with these expectations, Chinese aid projects in the leader's birth region are most likely to violate PAs in country-years where ethnicity is politically salient and public opinion towards China is favorable. Africa is distinct from the rest of our sample in that, on average, ethnicity is more salient and China is more popular.

This paper makes important contributions to several fields of studies. First, it further investigates the effects of Chinese aid on governance outcomes. Much has been written on how Chinese aid affects economic growth and governance outcomes (Brazys, Elkink, and Kelly, 2017; Brazys and Vadlamannati, 2021; Dreher, Fuchs, Hodler, et al., 2021; Dreher, Fuchs, Parks, et al., 2021; Isaksson and Kotsadam, 2018a; Isaksson and Kotsadam, 2018b), yet relatively few studies have touched upon the effects of Chinese aid on environmental outcomes. Studies by BenYishay et al. (2016) and Marty et al. (2019) find that Chinese aid had mixed effects on deforestation. Dreher, Fuchs, Parks, et al. (2022) record that Chinese aid had a mixed effect

on national environmental outcomes. We expand this work on the interaction of Chinese aid with environmental politics by focusing on how Chinese aid conflicts with *de jure* efforts by governments to protect environmentally sensitive areas. Making sense of how Chinese aid interacts with legal protections may improve our ability to understand mixed effects in observed environmental outcomes by delineating conditions under which such protections are enforced.

Second, it contributes to research on the efficacy of PAs for environmental conservation. Previous studies on the political economy of PAs suggest that these areas can be employed to hinder economic development in opposition regions (Mangonnet et al., 2022). PA can also be used to protect incumbent multinational firms from increasing competition (Garriga and Zhang, 2025). Our findings indicate that, under certain conditions, the effectiveness of PAs in mitigating the construction of public infrastructure is significantly undermined when a leader from the affected region assumes governmental power.

Third, we advance the study of birth region effects. Previous work theorizes that birth regions are attractive targets for aid in order to curry political favors from leaders (Berlin et al., 2023; Bomprezzi et al., 2024b; Briggs, 2021; Dreher, Fuchs, Hodler, et al., 2019; Hodler and Raschky, 2014). This literature is primarily built on studies of African politics and is substantively undertheorized. Leaders may wish to direct resources to their homeland for a variety of the reasons: to enrich co-ethnics (which may be valuable intrinsically), to please key members of their elite coalition, to mobilize sympathetic voters, or to extract their own rents. These differing rationales point towards distinct observable implications and scope conditions. Our theory focuses on enriching politically aligned businesses, even against the wishes of voters. Our results more clearly delineate the substantive conditions under which researchers should expect birth regions to shape aid allocation, which is key to understanding the extent to which birth regions may (or may not) appear in other contexts. For example, leaders may be especially concerned about sparking backlash by placing a Chinese project in their home region if China's activities are unpopular among the country's public.

2 Foreign Aid, Elite Capture, and Environmental Governance

Foreign aid is often vulnerable to elite influence in recipient countries. Donor agencies typically collaborate with local governments to implement aid projects, creating opportunities for elites to exploit incoming funds for personal gain. Research has linked foreign aid to increased corruption

and rent-seeking behavior (e.g., Alesina and Weder, 2002; Svensson, 2000). For example, Andersen et al. (2022) find that countries receiving higher inflows of World Bank aid experience increased money transfers to tax havens, suggesting that elites siphon off a portion of the funds. Beyond direct financial capture, elites also shape the sub-national allocation of aid, directing resources toward politically significant districts (Briggs, 2021; Jablonski, 2014; Masaki, 2018).

Elite capture is also a significant concern in the context of Chinese aid. Studies have shown that corruption tends to increase in areas near Chinese-funded projects (Brazys, Elkink, and Kelly, 2017; Isaksson and Kotsadam, 2018a). Moreover, Chinese aid is strongly influenced by the political interests of recipient government leaders. Unlike World Bank aid, Chinese assistance is more likely to be directed toward leaders' birth regions (Dreher, Fuchs, Hodler, et al., 2019), prioritized for politically strategic sectors such as infrastructure (Zeitz, 2021), and provided without governance-related conditions (Li, 2017). Additionally, Shea et al. (2025) find that Chinese aid can contribute to longer leadership tenures.

What are the consequences of elite capture? From an economic perspective, elite capture of foreign aid can undermine aid effectiveness (Hodler, 2007). For example, it has been linked to higher rates of project non-completion (Williams, 2017). Additionally, as Labonne (2016) demonstrates, local political business cycles in the Philippines can hinder the long-term development of municipalities. In the context of Chinese aid, however, there is no clear evidence that elite capture directly undermines effectiveness. Dreher, Fuchs, Parks, et al. (2021) find no significant difference in aid effectiveness between leader birth regions and non-birth regions. Nevertheless, their findings suggest that elite capture contributes to greater regional inequalities.

Whether elite capture undermines environmental governance remains an open question. Numerous anecdotal cases suggest Chinese projects often violate environmental standards. In East Africa, a Chinese state-owned firm partnered with Tanzania and Uganda to build an oil pipeline through ecologically sensitive areas, including a Ramsar-protected wetland, despite international opposition (EJ Atlas, 2023). In Sri Lanka, a Chinese-funded airport near wildlife sanctuaries disregarded environmental guidelines, harming local fauna (EJ Atlas, 2022b). Similarly, in Ecuador, a Chinese-owned gold mine polluted waterways serving 1,500 families (EJ Atlas, 2022c).

Recent studies offer mixed evidence on whether Chinese aid undermines environmental governance. In Cambodia, Chinese-funded highways have been linked to deforestation by connecting plantations and concessions (Baehr et al., 2023), while no such impact was found in Burundi and Rwanda (Marty et al., 2019). Chinese aid increased deforestation in Tanzania but

reduced it in Cambodia (BenYishay et al., 2016). The environmental effects of infrastructure aid depend on project type; for example, donor-funded irrigation projects in Cambodia have improved forest cover by easing pressure on nearby forests (Baehr et al., 2021).

An explanation for these varying results is that existing research does not fully account for the political economy dynamics driving the allocation of aid. There is strong evidence suggesting that leaders strategically implement environmental protection measures, such as the designation of protected areas (PAs), to enhance their political standing. While PAs are intended to promote conservation, they have distributional consequences, creating winners and losers, which makes them attractive targets for political manipulation. The establishment of PAs restricts or prohibits natural resource extraction, disrupting local economies that rely on these activities. Leaders can exploit these economic consequences to generate backlash against political opponents or, conversely, avoid designating PAs in areas where industrial interests are crucial to maintaining their political coalition (Alger, 2023; Beacham, 2023; Mangonnet et al., 2022).

If leaders strategically place PAs, it is also plausible that they strategically enforce PA regulations, particularly when a Chinese aid project is located within a PA. There are numerous examples from other policy areas demonstrating selective law enforcement in ways that serve political interests. For instance, Holland (2015) documents how South American governments deliberately fail to enforce street vending regulations because poor voters represent key constituencies. Similarly, Mattingly (2016) shows that property expropriations in Chinese villages become more frequent when influential leaders from local social institutions are integrated into the local party cadre.

Previous research on PAs has not explored whether PA enforcement—as indicated by the placement of Chinese aid projects within PAs—is linked to elite capture. There is strong evidence that PAs can mitigate deforestation (e.g., Andam et al., 2008) and protect biodiversity (e.g., Brodie et al., 2023). However, these findings may mask heterogeneous effects, suggesting that the effectiveness of PAs depends on the absence of elite capture dynamics that allow infrastructure projects to be built within them.[1] The following section develops a theoretical framework to explain why and under what conditions elite capture—as measured by project placement in a leader's birth region—can lead to PA violations, i.e., the placement of Chinese aid projects in PAs.[2]

[1]There is evidence that infrastructure within PAs is harmful to the environment. While it may not directly cause deforestation, it can contribute to biodiversity loss by disrupting wildlife habitats (Xiong et al., 2025).

[2]The contention, of course, is not that China is the only provider of foreign aid who funds projects that violate PAs; indeed, anecdotes abound of World Bank projects causing negative environmental outcomes. The contention is simply that China's foreign policy orientation and practices make it a most-likely case for our theory.

3 Why Violate Protected Areas?

Our theory rests on five key preliminaries. First, PAs increase the costs of economically extractive activities within their borders. PAs legally prohibit or severely curtail the scope of economic activities that take place within a particular geographic area. If these *de jure* obstacles can be disregarded, it may require engaging in costly corruption or some other form of *quid pro quo* that generates further costs. Even with governmental cooperation secured, PAs can still impose costs on extractive activities by creating focal points for citizens or activist groups to monitor for and mobilize against infractions. These costs are particularly frustrating for would-be extractors given the concentration of resources often found within PAs. Attempts by the Ugandan government (along with Tanzanian and Chinese partners) to extract and transport oil from within a PA near Uganda's Lake Albert met fierce opposition from activists in part because of expected negative impacts on the protected ecosystem (EJ Atlas, 2023). Large PAs may also simply pose massive obstacles; for example, efforts to connect Mombasa and Nairobi by rail required either going through PAs or costly reroutings to avoid infringing on PA boundaries. Importantly, the last point holds even in the presence of so-called "paper parks" where enforcement is scarce (Di Minin and Toivonen, 2015).

Second, such obstacles to economic activity are unpopular among key local actors. Recent work on PAs suggests they are more likely to be placed in opposition-led areas in order to hinder economic activity and starve those areas of economic gains (Mangonnet et al., 2022). Alger (2023) demonstrate that the presence of highly salient commercial interests leads to the creation of shallower protection arrangements, as politicians seek to avoid the backlash associated with sacrificing economic gains. Similarly, Beacham (2025) shows that protection is less likely in more economically valuable regions. It appears that these anti-protection efforts are driven not by voters – who may actually mobilize in favor of protection in natural resource-dependent areas – but by politically powerful extractive interests (Beacham, 2023).

Third, national incumbents are particularly interested in appealing to extractive interests in their home regions. Firms in home regions have a less credible threat to support a challenger, thus it is much easier for leaders to extract rents from them (see Kasara, 2007). Channeling Chinese aid projects to the home regions is therefore appealing for leaders as they are a means of stimulating local activity, especially infrastructure, mining, and energy projects. Marchesi et al. (2025), for example, show that Chinese projects can increase the profitability of local firms.

This also implies that our theory is more applicable in contexts where political cleavages are

defined along ethnic and/or regional lines. In developing countries where ethnicity is particularly salient, the home region serves as a key well of both popular and elite support for the incumbent. Extractive firms may serve as key political donors to the incumbent's cause. Voters may not support infringement of PAs per se, but may be unwilling to punish the incumbent for fear a leader with a different ethnoregional base may come to power. They also may possess limited means to effectively hold the incumbent accountable – that is, elections may be distorted by manipulation, fraud, or violence. Voters may also tend to vote on the basis of clientelist ties instead of policy appeals; defection would risk access to material benefits of a clientelist network.

This focus on firms, as opposed to voters, warrants further justification. One reasonable expectation is that is that voters seek to weaken PAs because PAs stifle local economic activity, which has spillovers for all locals. Indeed, there are instances of locals pushing back against new PAs, especially those that undermine existing sustainable resource management practices and displace Indigenous peoples.[3] Despite some exceptions, scholarly literature argues that local citizens tend to mobilize *in favor of* protection. This work claims that citizens internalize the negative effects of environmental degradation better than firms. Consistent with this claim, natural resource dependence is positively related to environmental protection when democratic institutions are strong (i.e., when citizens are empowered), but not when those institutions are weak (Beacham, 2023). In the case of Brazil, Mangonnet et al. (2022) finds that citizens do not punish incumbents for designating new PAs and that new PAs do indeed depress local extractive activity. Evidence from Australia and the US suggests that the influence of industrial interests on government is the main obstacle to effective protection (Alger, 2023). This literature suggests that firms, not voters, are the actors who stand to benefit the most from lax environmental protection practices.

Fourth, incumbents can permit violations of PA rules, although doing so may be costly. The ability of politicians to selectively enforce rules is a feature of regimes worldwide, particularly in the developing world (e.g., Holland, 2015; Sun, 2021). Violations might occur through legal means (e.g., the granting of permits for extraction despite the existence of a PA) or by simply ignoring nominally illegal extraction. Although poor state capacity constrains state ability to enforce laws (e.g., González and King, 2004), we are primarily interested in strategic decisions to enforce laws that the state does indeed have the capacity to enforce.

Finally, the incumbent has access to foreign aid from a donor who is concerned mostly with a credible commitment to finish a project, rather than with the protection of environmentally sensitive

[3] See for example https://www.survivalinternational.org/news/14043.

regions in their own right. Scholarship on even the most stringent donors has shown that they are willing to sacrifice optimal project features in favor of a higher likelihood of completion (Briggs, 2021). We focus on China, a donor who has been shown to be particularly amenable to following the political whims of incumbents, including allocating a disproportionate number of projects to the incumbent's home region (Dreher, Fuchs, Hodler, et al., 2019). China also specializes in highly visible and environmentally disruptive projects in infrastructure (Zeitz, 2021), while the World Bank and other donor-driven multilateral organizations have been pressured into adopting more rigorous environmental and social safeguards by donor governments (who were themselves pressured by activists) (Humphrey and Michaelowa, 2013). As a test of scope conditions, we also analyze World Bank projects, but expect that the World Bank acts as a stronger constraint on the recipient government.

With these preliminaries in mind, consider the leader's decision in evaluating potential aid projects. The leader evaluates equivalent aid projects, one which will be sited within the birth region and one which will be sited within an different region. For simplicity, assume that the leader may either approve the project or deny it. If approved, both projects will be located within the borders of PAs. Local economic actors within both regions lobby the leader to accept the project, as they stand to benefit from the project's associated economic activity. The key distinction is that the economic actors in the home region are part of the incumbent's support base, whereas the other region's actors are not. The incumbent can thus count on a stronger political return to economic activities in the home region; profits can be directed into the reelection campaign or into the pockets of key elites. While opposition-friendly firms may in theory be persuaded, they are more likely to be approached by and grant support to a possible challenger. The returns to a project in the non-home region are therefore uncertain from the incumbent's perspective. The leader's optimal strategy, then, is to approve the home region's project and reject the non-home region project. The leader may even use the location within a PA as justification for not implementing the non-home region project. The main implication of this process is that home-region aid projects should be more likely to violate PAs. We formally state this in the following hypothesis.[4]

Hypothesis: *Chinese aid projects located in the incumbent's home region are more likely to be*

[4]To simplify the argument, we assume away a strategic donor. Analyzing the donor's incentives would only serve to reinforce the hypothesis we derive. In the face of potentially high costs – owing to possible backlash for infringing on a PA, for example – a donor is likely to view a leader's commitment to implement a project as more credible if the leader stands to benefit politically from doing so. The donor would thus be more willing to fund a PA-violating project in the incumbent's home region.

placed within the borders of a PA than aid projects in non-home regions.

4 Research Design

4.1 Sample

Our unit of analysis is the individual aid project. The sample includes all Chinese infrastructure projects between 2000 and 2020 for which we have a recorded commitment year and that are implemented in a country for which we know the leader's birth region. We focus on infrastructure projects as these tend to be the most damaging to PAs due to the associated construction activities. According to the Global Chinese Development Finance (GCDF) Dataset (Goodman et al., 2024), 3,675 projects meet these criteria.[5] The sample encompasses projects valued at 615.3 billion US dollars, implemented across 118 countries and covering all types sectors ranging from eduction to mining.[6]

4.2 Treatment

Our main treatment variable is a binary indicator set to 1 if a project is implemented in a province (ADM1 level) that corresponds to the birth region of the current leader. The GCDF dataset allows us to precisely identify all ADM1 provinces where a given project is implemented. Since many projects span multiple provinces, the variable is also coded as 1 if any of these provinces include the leader's birth region. To determine whether the provinces where projects are implemented align with the leader's birth region, we utilize the newly released Political Leaders' Affiliations Dataset (PLAD) (Bomprezzi et al., 2024a).

4.3 Dependent Variable

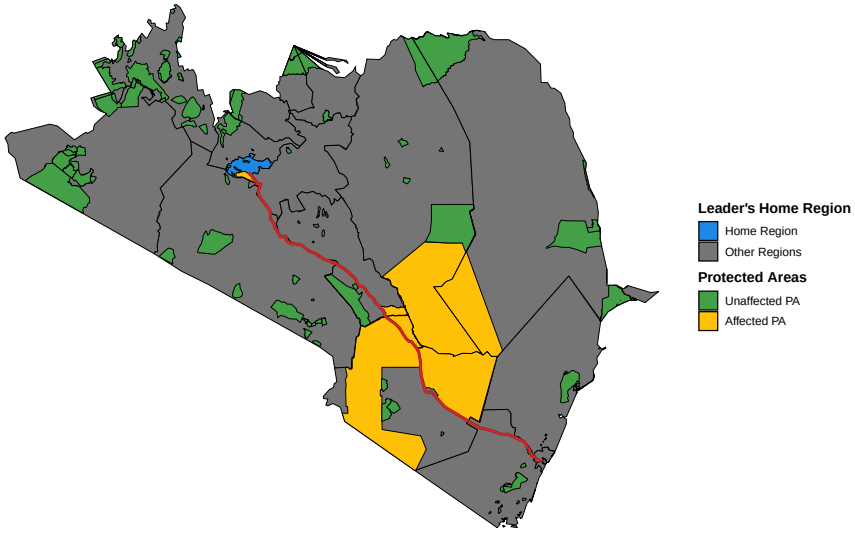
To construct our dependent variable, we match geo-location data on the presence of PAs with the locations of Chinese aid projects. We retrieve the geo-locations of all PAs from the World Database on PAs (UNEP-WCMC, 2019). A key advantage of the GCDF dataset is that it provides geo-coded data for the precise extent of each Chinese aid project. For example, Figure 1 illustrates the Kenya

[5]Overall, the dataset includes 9,404 projects. Of these, 5,444 were excluded because they are not classified as infrastructure projects. The remaining projects were excluded either due to missing country codes or incomplete commitment year information, which represent a minority of cases.

[6]33.4% of projects are social development projects, 20.2% transport projects, 18.9% energy projects, 11.8% education projects, and 11.7% mining projects.

SGR project, where the GCDF dataset details the exact route of the project, depicted in red. This enables us to accurately match Chinese aid projects with PAs.

Figure 1: Kenya Standard Gauge Railway and Violations of PAs



Note: Figure shows a subset of counties in Kenya. The county colored in blue is the birth region of the incumbent leader Uhuru Kenyatta. The red line in the represents the route of the SGR. Yellow areas area PAs affected by the SGR and green areas are unaffected PAs in the map area.

There are four different ways how Chinese projects and PAs relate to each other (see Table 1). The first category comprises projects that are not located within a PA, representing the majority of cases. In fact, 78.3% of Chinese aid projects do not violate PAs. While this suggests that most Chinese projects do not directly threaten PAs, it is concerning that 21.7%—or one-fifth—of all Chinese projects do harm PAs, endangering some of the most sensitive environments globally.[7] This issue is further exacerbated by the fact that the most destructive types of projects—transport and energy—have an even higher share within PAs, with 26.8% of transport projects and 24.9% of energy projects located inside PAs.

The second category represents projects which are located within PAs that are both inside and outside a leader's birth region. The Kenya SGR project, shown in Figure 1, serves as a prime example. At the time the SGR was signed, Kenya's leader was Uhuru Kenyatta, whose birth region is the capital, Nairobi. The SGR project encroaches on a PA within Nairobi and also passes through two PAs in counties outside of Nairobi. In our sample, 4% of all projects violate PAs both inside and outside a leader's birth region.

[7]This is a conservative estimate, as one could argue that projects in close proximity to PAs also pose a threat. When we apply a 1 km and 5 km buffer around Chinese aid projects, the percentage of projects affecting PAs increases to 27.6% and 42.8%, respectively.

Table 1: Classification of PA violations

	PA Outside BR = 1	**PA Outside BR = 0**
PA Inside BR = 1	Both (N=148, 4%)	Only Inside (N=28, 0.8%)
PA Inside BR = 0	Only Outside (N=621, 16.9%)	In no PA (N=2878, 78.3%)

Note: PA stands for PA and BR is the abbreviation for birth region. Percentages in parentheses represent the percentage of cases in our data set that fall under a given category.

The final two categories distinguish between projects that violate PAs located exclusively outside or inside a leader's birth region. The least common scenario in our sample is when a project infringes upon a PA solely within the leader's birth region, accounting for only 0.8% of all Chinese aid projects. Conversely, the second most common scenario involves projects that violate PAs only outside the leader's birth region, representing 16.9% of the sample.

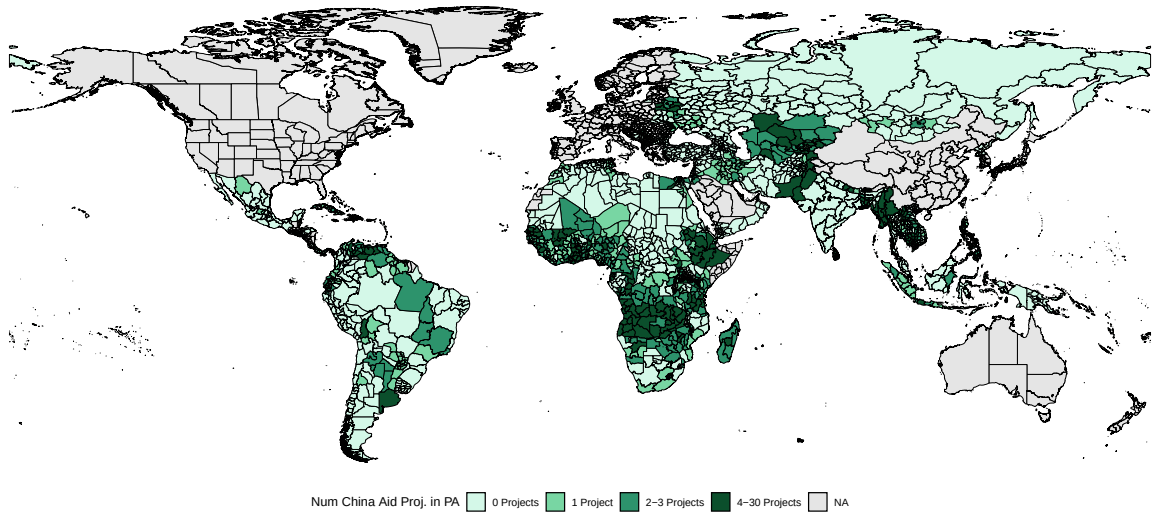
For our main analysis, we use a binary dependent variable called *In PA*. It is coded as 1 if a project violates any PA, regardless of whether the affected area is inside or outside the leader's birth region. Figure 2 illustrates the geographic distribution of Chinese aid projects that violated PAs between 2000 and 2020, dis-aggregated by ADM1 region. The figure reveals that violations of PAs are not concentrated in any specific region. Numerous Chinese projects infringe on PAs across Southeast Asia, particularly in countries like Cambodia, Myanmar, and Laos. Similarly, there are significant violations in Africa, with Angola, Ethiopia, and Ghana recording a high number of such incidents.

Figure 3 shows the temporal development of Chinese aid projects that overlap with PAs. Overall, the share of projects placed within PAs has remained relatively stable, with a slight upward trend compared to the early years of Chinese development assistance. This pattern suggests that there has been no significant structural shift in how Chinese aid projects are sited with respect to environmental protections. Furthermore, the trend does not indicate a clear learning process—there is no evidence that earlier projects were less environmentally conscious and that Chinese actors have become more attentive to environmental concerns over time.

4.4 Estimation Strategy

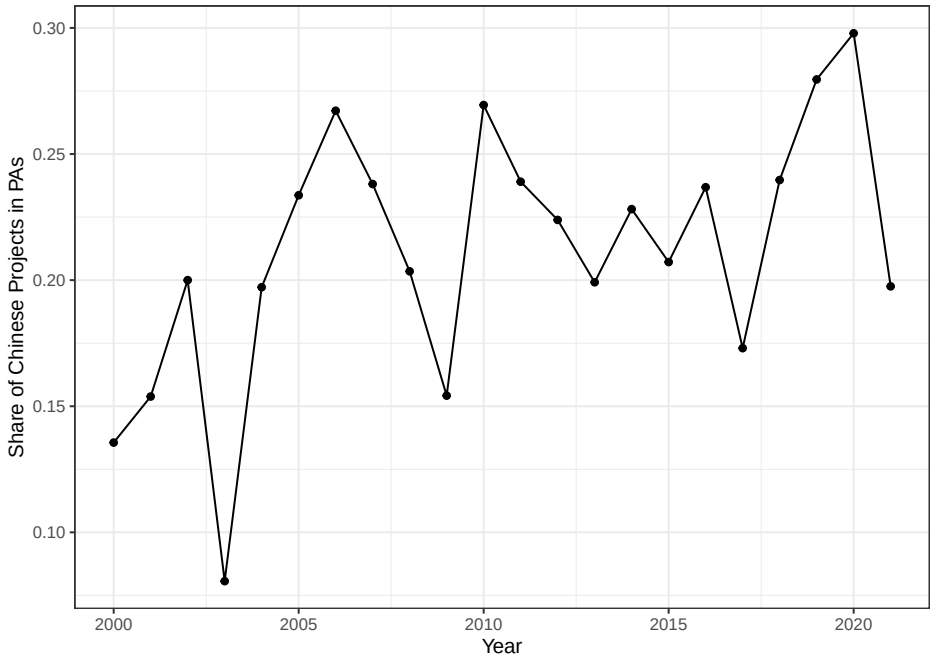
We estimate the impact of birth region on the allocation of Chinese aid projects within PAs using the linear probability model specified in Equation 1. This model specification is consistent with the

Figure 2: Number of Chinese Aid Projects in a PA at ADM1 Level



Note: The figure illustrates the number of Chinese aid projects that impacted PAs within each ADM1 unit between 2000 and 2020. Grey regions indicate countries that have not received any Chinese aid project between 2000 to 2020.

Figure 3: Share of Projects in PAs over Time



approach employed by Dreher, Fuchs, Hodler, et al. (2019).

$$\text{ln PA}_{icst} = \beta\text{Birth Region}_{ct} + \delta\mathbf{X}'_c + \lambda\text{Sector}_i + \gamma\text{Num. Regions}_i + \zeta_{st} + \epsilon_{icst} \quad (1)$$

Since the allocation of projects to birth regions is not a random process, our estimation strategy employs a selection-on-observables approach. To control for country-specific confounders, we include country-year fixed effects (ζ_{st}). To address potential regional confounders, we incorporate a set of time-invariant control variables at the ADM1 level, denoted by $\mathbf{X}'_c$. These variables include a region's population in 2000, the total number of PAs in 2000, the total number of mines, the total number of oil and gas fields, average nighttime light in 2000, the total area in square kilometers, and whether a project is implemented in a capital region.[8] If a project spans multiple ADM1 regions, we aggregate these variables to create a single observation per project. Finally, we account for project-level characteristics by including sector fixed effects (λ) and controlling for the total number of ADM1 regions a project covers (γ).

We use cluster-robust standard errors at the recipient country level. Given the likelihood of within-country spillovers in the placement of aid projects, it is reasonable to assume that observations within a country are not independent of one another. In contrast, we are less concerned about spatial spillovers across countries, as our dataset does not include cross-border projects, and project allocation decisions are primarily made by the recipient governments. For these reasons, we do not apply standard error adjustments that account for spatial proximity across countries.

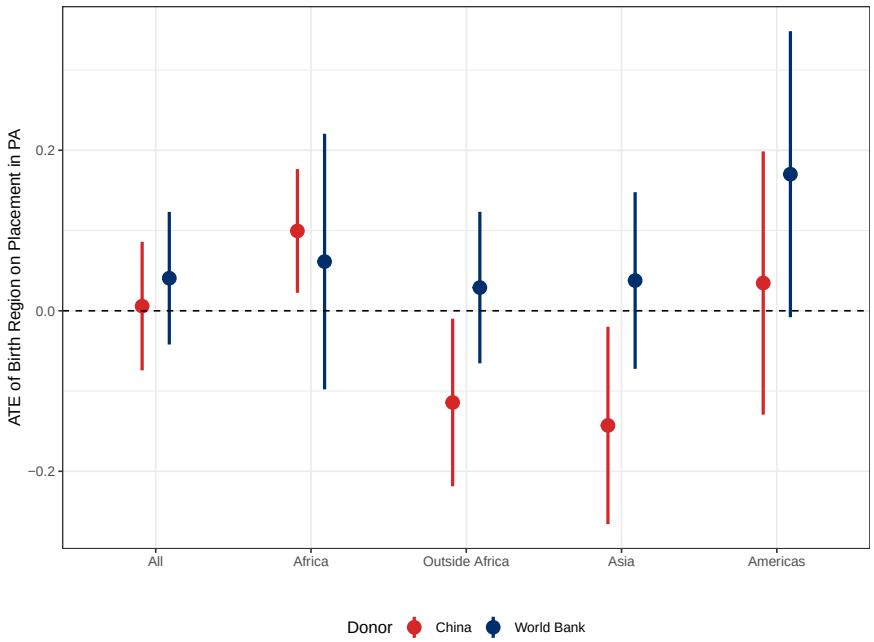
5 Leader Birth Region and PA Violations

Figure 4 displays the effects of a leader's birth region on the placement of Chinese and World Bank aid projects within PAs. There are three key findings in regard to Chinese aid projects. First, when examining the entire sample, the presence of a Chinese aid project in a leader's birth region has no significant effect on the likelihood that the project is located in a PA. In fact, the coefficient is nearly zero, suggesting that leaders' decision to respect PA boundaries is unrelated to their birth region. This outcome does not align with our theorized effect as proposed in our main hypothesis.

Second, given that the foundational study by Dreher, Fuchs, Hodler, et al. (2019) focuses on African leaders, we decided to subset our analysis to projects implemented in Africa. The results

[8] For population, nighttime light, and total area, we take the natural logarithm to normalize the distribution.

Figure 4: Effect of Birth Region on Aid Project Placement in PAs



Note: Figure includes point estimates of birth region with 95% confidence intervals. Standard errors are clustered by recipient country. The models include the following covariates: Number of ADM1 regions covered by project, number of mines, number of oil and gas fields, log area, log population in 2000, log average night time light, and number of PAs. The models also include recipient-year and project sector fixed effects. The World Bank models do not include sector fixed effects as they usually apply to more than one sector.

from this subset reveal a different pattern. Specifically, in African countries, Chinese projects that benefit a leader's home region are 9.9 percentage points more likely to be located in a PA compared to projects placed outside a leader's birth region. Considering that the baseline probability of a Chinese project being located in a PA is 21.7%, this effect represents a 46% increase in the likelihood that a project violates a PA.

Third, when we exclude all projects implemented in Africa from the sample, we observe an opposite pattern compared to the African sample. In countries outside of Africa, projects targeting a leader's birth region are less likely to be placed in PAs. Specifically, the probability of violating a PA decreases by 11.4 percentage points when the project is located in a birth region. This decline is statistically significant at the 95% confidence level. The negative coefficient in the non-African sample is largely due to dynamics in Asia and not in Central and South America. These findings suggest that the aggregate null result is not genuinely indicative of a null effect but rather masks opposing dynamics across different geographic regions.

We argue that Chinese aid is responsive to political leaders' birth regions due to its connection with rent-seeking behavior. To further support this claim, we conduct a placebo test by examining

whether World Bank projects are also more likely to be located in birth regions and placed within PAs. This serves as a useful placebo test, as prior research shows that World Bank project allocation is not influenced by birth regions (Dreher, Fuchs, Hodler, et al., 2019) and is generally less susceptible to corruption (Brazys, Elkink, and Kelly, 2017; Isaksson and Kotsadam, 2018a), owing to its more stringent appraisal procedures, which include environmental safeguards (Buntaine, 2015). Accordingly, we expect that birth regions should not affect the probability that a World Bank project is located within a PA.

To test this, we use the Geocoded Official Development Aid Dataset (GODAD) to identify all infrastructure-related World Bank projects between 2000 and 2021 and apply the same spatial matching strategy used for the Chinese aid analysis.[9] This results in a dataset of 2,123 World Bank projects over that period.

Surprisingly, we find that 32.2% of these projects are located within PAs—a higher share than for Chinese aid projects. However, if a project violates a PA, World Bank projects are less likely to encroach on the most strictly protected categories: only 3.3% intersect with high-stringency PAs, compared to 11% for Chinese-funded projects. Moreover, it is important to note that this figure may overestimate the problem in the World Bank case, as we cannot definitively identify which projects involve actual infrastructure components.

In line with our expectations, Figure 4 shows that a leader's birth region is not significantly associated with the likelihood that a World Bank project is located within a PA. While the coefficients across all samples are positive, none are statistically significant at the 95% confidence level. This suggests that, although a higher share of World Bank projects are placed inside PAs overall, this pattern does not appear to be driven by leaders' efforts to channel resources toward their birth regions for rent extraction. These findings are consistent with previous research and further strengthen our confidence in the interpretation of the China aid results.

5.1 Addressing Post-Treatment Bias

Besides the non-random assignment of birth regions, a major challenge for our design is the risk of post-treatment bias. Our sample consists only of projects that have either been realized or have a firm commitment for implementation. However, this sample may be influenced by the

[9]GODAD does not provide a clear indicator for whether a project is infrastructure-related. We follow the approach of Zeitz (2021), who classified World Bank projects as infrastructure-related if they fell into one of the following sectors: water supply and sanitation, transport and storage, communications, energy, agriculture, forestry, fishing, industry, mining, construction, and other social infrastructure.

presence of birth regions. Dreher, Fuchs, Hodler, et al. (2019) demonstrate that birth regions tend to receive more Chinese aid. Similarly, Briggs (2021) find in a conjoint experiment with development practitioners that governments are more likely to favor projects in the home region of their leader. Therefore, it is reasonable to assume that by conditioning on project implementation, we may inadvertently introduce post-treatment bias into our estimate.

To address this issue, we employ a strategy proposed by Knox et al. (2020) to estimate the effect of race on police violence. In their study, researchers face a similar dilemma: they can only observe police interactions once they have occurred, but the decision of whom the police stop is downstream of their treatment, the civilian's race. Similarly, in our case, it is impossible to observe all proposed Chinese aid projects, and we lack a clear estimate of how many projects were implemented solely because they were located in a leader's birth region. We therefore adopt the estimator proposed by Knox et al. (2020), which estimates bounds for the average treatment effect conditional on the proportion of projects implemented due to their location in a leader's birth region. More details on how we translate the approach by Knox et al. (2020) to the setting of Chinese aid is provided in section B of the supplementary material.

When accounting for the possibility of post-treatment bias, we find that the estimates in Figure 4 are relatively conservative in their magnitude.[10] Using the bounding approach proposed by Knox et al. (2020), we find that assuming a portion of projects were implemented specifically to benefit the leader's birth region amplifies the effect of birth region on the placement of Chinese aid projects in PAs. For the African sample, which based previous work has the highest chance of post-treatment bias, even the lowest possible treatment effect remains consistently higher than the coefficient estimated under the assumption of no post-treatment bias.

5.2 Projects Near Protected Areas

We further assess the robustness of our findings by creating buffer zones around the included Chinese projects. Projects can have spillover effects that may damage PAs even when they are placed outside of them; for instance, chemicals used in industrial processes might enter waterways that flow into PAs, or trains traveling along a new railroad might release air and noise pollution that disrupt nearby ecosystems. Environmental activists are acutely aware of these risks. In South Africa, for example, activists opposed a phosphate mining operation near West Coast National Park due to environmental concerns (EJ Atlas, 2022a). Therefore, we aim to explore whether the birth

[10] Results are presented in Figure B.1 in section B of the supplementary material.

region effect extends to projects located just outside PAs by creating 1km and 5km buffers around projects.

Table 2: Effect of Birth Region on Placement in PA with Buffer

	All		Africa		No Africa	
Model:	In PA (1km) (i)	In PA (5km) (ii)	In PA (1km) (iii)	In PA (5km) (iv)	In PA (1km) (v)	In PA (5km) (vi)
Variables						
Birth Region	0.022	0.012	0.109**	0.062	-0.082	-0.078
	(0.038)	(0.042)	(0.040)	(0.046)	(0.050)	(0.068)
Num. ADM1 Regions	0.041*	0.027*	0.080**	0.053**	0.028+	0.017
	(0.016)	(0.013)	(0.013)	(0.014)	(0.015)	(0.013)
Num. Mines	0.005*	0.009**	-0.001	0.002	0.010**	0.016**
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)
Num. Oil/Gas	0.008	0.005	0.000	0.013	0.012+	0.002
	(0.006)	(0.008)	(0.016)	(0.018)	(0.007)	(0.009)
Log Population	0.055**	0.102**	0.065**	0.112**	0.053+	0.097**
	(0.019)	(0.024)	(0.018)	(0.028)	(0.030)	(0.036)
Log Total Area	0.000	-0.001	-0.029	-0.024	0.015	0.033
	(0.017)	(0.023)	(0.023)	(0.028)	(0.028)	(0.040)
Num. PAs	0.001*	0.000	0.000	0.000	0.001	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Log Avg. Nighttime Light	-0.078+	-0.047	-0.116+	-0.066	-0.047	-0.005
	(0.040)	(0.055)	(0.067)	(0.087)	(0.042)	(0.066)
In Capital	0.037	0.040	-0.007	0.020	0.015	0.006
	(0.043)	(0.046)	(0.065)	(0.071)	(0.044)	(0.048)
Fixed-effects						
Recipient-Year	Yes	Yes	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
R^2	0.583	0.605	0.607	0.626	0.585	0.607
Observations	3,675	3,675	1,850	1,850	1,825	1,825

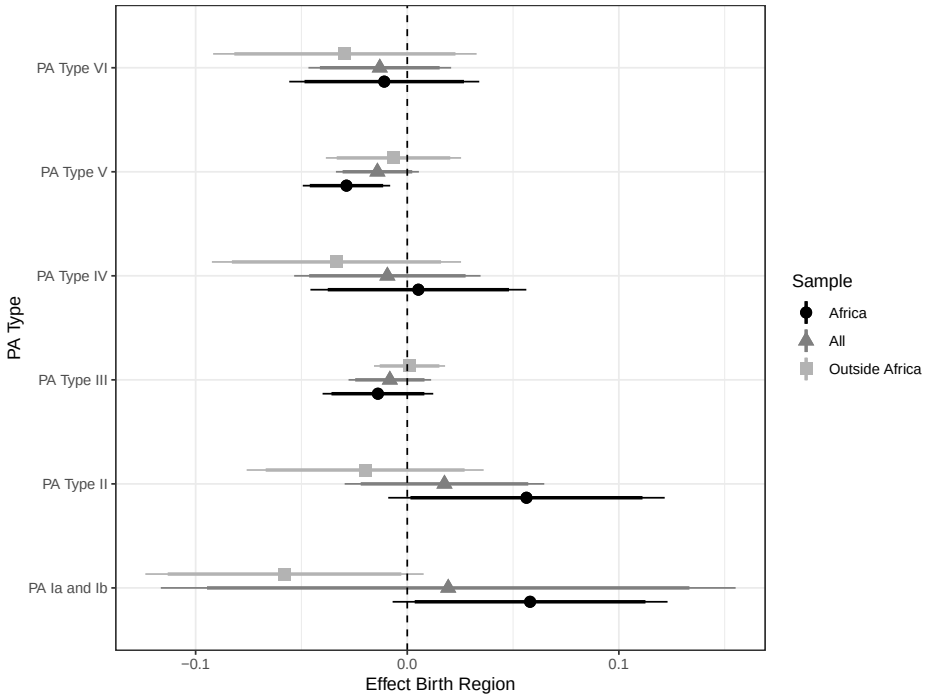
Clustered (Recipient) standard-errors in parentheses
*Signif. Codes: **: 0.01, *: 0.05, +: 0.1*

The results in Table 2 indicate that the null results at the aggregate level remain consistent even when considering projects that are just outside a PA. In the Africa sample, the effect of birth regions on the placement of projects within PAs persists under the 1 km buffer zone specification but disappears when a 5 km buffer zone is applied. While the coefficient remains positive, it is less precisely estimated, which is expected given that the 5 km buffer likely introduces more noise—i.e., projects that are not particularly contentious and do not require strong backing from the leader. For the non-Africa sample, the coefficient also remains negative but is no longer statistically significant. We attribute this change to the increase in noise as well. Overall, the results in Table 2 suggest that the projects most affected by the birth region effect are those that actually cross into PAs.

5.3 Types of Protected Areas

Another approach to better understand the results is to examine the types of PAs that Chinese aid projects encroach upon. The International Union for Conservation of Nature (IUCN) classifies PAs into seven categories, each differing in the level of permitted human activity. For example, IUCN Category Ia designates "strict nature reserves", where all human activities, except for scientific research, are prohibited. In contrast, IUCN Category VI allows for some form of sustainable resource use. Therefore, we assess whether the birth region dummy is associated with changes in the probability of a project being placed in a PA, depending on the category.

Figure 5: Effect of Birth Region on Project Placement in PAs by Type



Note: Figure includes point estimates of birth region with 95% and 90% confidence intervals. Standard errors are clustered by recipient country. The models include the following covariates: Number of ADM1 regions covered by project, number of mines, number of oil and gas fields, log area, log population in 2000, log average night time light, and number of PAs. The models also include recipient-year and project sector fixed effects.

The results in Figure 5 suggest that the birth region effect is most pronounced in the strictest types of PAs. While the findings do not reach conventional significance at the 95% level, likely due to limited statistical power, they are suggestive at the 90% level. In African countries, projects located in birth regions are more likely to be placed in PAs with the highest level of protection, namely IUCN Categories Ia, Ib, and II. In contrast, the opposite pattern emerges in non-African countries.

For less restrictive PAs, we do not observe a birth region effect. In fact, the coefficients turn

negative, even for projects in Africa. This finding aligns with our theoretical argument: projects in highly restrictive PAs may offer significant economic benefits but also entail substantial costs, potentially discouraging leaders from pursuing them. In other words, the distinction between projects in birth and non-birth regions is most apparent in situations where violating PA restrictions is particularly costly.

6 Unmasking Heterogeneity in the Effects of Birth Regions

We demonstrated that the placement of aid projects in a political leader's birth region affects the likelihood that these projects are also located within PAs. However, this relationship is strongly influenced by regional differences. What substantive variables explain differential effects by region? In particular, what accounts for the differences between Africa and the rest of the world?

In this section, we discuss possible variables that moderate the effect of birth region. This not intended as an exhaustive discussion but as an exploratory analysis of the factors driving these regional differences. Based on our theoretical framework, we will present factors related to how domestic audiences view the violation of PAs for Chinese aid projects as we expect that citizens can impose political costs leaders who allocate aid projects within PAs. While no single factor fully explains the regional heterogeneity displayed in Figure 4, the exploratory analysis below will present various pieces of the puzzle that help account for the observed differences.

6.1 Ethnic Political Voting

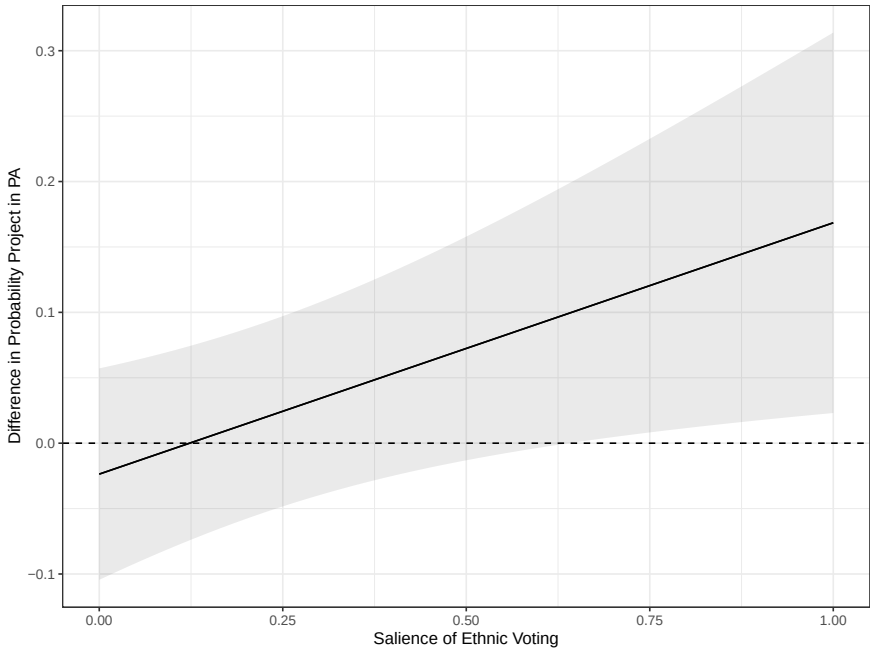
One source of variation in the costs of PA violation is the salience of ethnicity in a polity's politics. In states where ethnicity is highly salient, the executive's co-ethnics face a credible commitment problem in deciding to punish the leader for violations of PAs. They would like to be able to commit to vote against the incumbent for allowing aid projects in PAs, but cannot commit to supporting a challenger from a different ethnic group.[11] Under a different president, the members of an ethnic group would almost certainly be worse off; state resources might be funneled to different regions, and voters would lose access to clientelist networks. We therefore expect that as ethnic salience increases, a project's connection to a leader's home region will become a stronger predictor of its placement within a PA.

To evaluate this claim, we examine country-level variation in the level ethnic political voting.

[11] This resembles the theoretical argument from Kasara (2007).

If ethnically motivated voters do not pose a credible electoral threat to politicians, we would expect that a stronger presence of ethnic voting increases the likelihood that leaders exploit their position by placing projects in PAs, provided these projects benefit their home region. To measure ethnic voting, we use data compiled by Juon (2024), which combines and standardizes survey questions on support for ethnically based political parties among 900,000 respondents in 132 countries. We aggregate this data at the country-year level, using the share of respondents in a given year who express a preference for ethnic voting as our moderating variable. For some country-years, survey data is unavailable. In these cases, we project the most recent available observation forward.[12]

Figure 6: Ethnic Political Voting as a Moderator



Note: Figure shows marginal effects of birth region on placement in PA conditional the salience of ethnic voting with 95% confidence intervals. Standard errors are clustered by recipient country. The models also include recipient-year and project sector fixed effects.

The results in Figure 6 provide suggestive evidence in line with our expectation. A project placed in a birth region has no significant relationship with the placement of a project in a PA in countries with low levels of ethnic voting. However, as ethnic voting becomes more salient, we see that the placement of projects in a leader's home region increase the chance of a PA violation. This is in line with our argument that in more ethnically polarized countries, leaders face fewer constraints when dealing with Chinese aid projects.

[12]We acknowledge that this approach relies on the strong assumption that ethnic voting patterns remain unchanged since the last available survey. However, given that ethnic voting is often a deeply entrenched and stable feature in certain societies, we believe this assumption is reasonable.

This result may be one of the factors that can explain why we see the difference African and non-African countries in our main results. In our sample, African countries express a much higher propensity for ethnic voting than non-African countries. The average ethnic political voting score for projects in Africa is 0.6 and outside of Africa it is 0.19.[13] Thus, in these countries, it could be easier for politicians to violate PAs than in non-African countries.

6.2 Public Opinion towards China

A second factor that may shape the likelihood of backlash against Chinese projects that infringe on PAs is the favorability of public opinion toward China. Chinese infrastructure projects have sparked opposition in multiple countries, including those with close diplomatic ties to Beijing. In Myanmar—a longtime Chinese client state—popular protests targeted investments by Chinese state-owned enterprises in dams, mines, and oil pipelines. Among the major grievances, according to Miller (2019), were environmental degradation and the exploitation of natural resources. In response to mounting public pressure, the Burmese president ultimately canceled the project.

When public sentiment toward China is unfavorable, it becomes harder for leaders to persuade people about the utility of a Chinese aid projects, in particular, when it involves violations of PAs—projects that are inherently more likely to attract controversy. As a result, leaders may be more reluctant to place aid projects into a PA when sentiment towards China is not favorable even when it benefits their birth region because they do not want to attract further negative publicity to endanger the project.

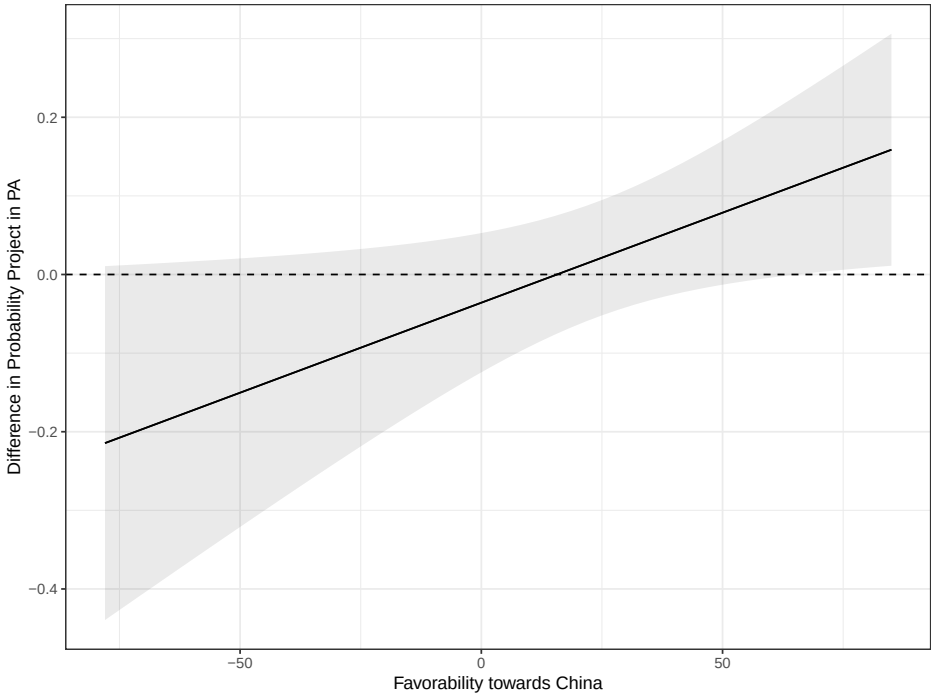
Measuring public opinion toward China on a global and temporal scale is challenging. The most comprehensive available dataset is the one compiled by Chubb (2024), which aggregates surveys on public sentiment toward China. We focus specifically on polls that measure individuals' favorability toward China, using net favorability as our key metric. In country-years with multiple surveys, we calculate the average net favorability across polls, weighting each poll by its sample size.

However, survey data is sparse for many countries, often available only at intervals of three to four years. Given this substantial missingness, assuming that public opinion remains constant between survey years is not reasonable. To address this, we imputed the missing values using Amelia II, a software designed for multiple imputation of time-series cross-sectional data (Honaker et al., 2011). For the imputation, we constructed a country-year panel dataset including all countries

[13]The ethnic political voting score ranges between 0 and 1 (see Juon, 2024).

with at least one survey observation between 2000 and 2020. We then matched this data with a set of covariates likely to influence public opinion toward China. To ensure robustness, we ran ten imputation models and aggregated the results by calculating the mean imputed public opinion per country-year, aligning it with our project-level Chinese aid dataset.

Figure 7: Public Opinion towards China as a Moderator



Note: Figure shows marginal effects of birth region on placement in PA conditional on a country's public opinion towards China with 95% confidence intervals. Standard errors are clustered by recipient country. The models also include recipient-year and project sector fixed effects.

The results in Figure 7 provide suggestive evidence that local public opinion can influence how a leader's birth region affects the placement of aid projects in PAs. As public opinion toward China becomes more favorable, the relationship between birth region and PA violations reverses. At low levels of favorability, projects located in a leader's birth region are less likely to violate a PA. However, as net favorability increases, projects in a leader's birth region become more likely to be placed in a PA.

Public opinion toward China may be another factor explaining why birth regions encourage PA violations in Africa but not outside of Africa. In our sample, African countries had an average net favorability toward China of 40.6 percentage points, meaning that the share of people with a favorable view of China exceeded those with an unfavorable view by 40.6 percentage points. Outside of Africa, this net favorability was lower, at 31 percentage points. This suggests that African leaders may have been less inclined to avoid PA violations because they could more easily

justify Chinese aid projects to the public, emphasizing their benefits despite potential environmental concerns.

7 Alternative Explanations

We argue that the placement of aid projects within PAs is largely shaped by the rent-seeking interests of political leaders and the capacity of citizens to hold their leaders accountable. However, there are also other plausible factors that may deter leaders from placing projects in PAs. One such factor is international pressure. Garriga and Zhang (2025) find that countries with larger stocks of foreign direct investment (FDI) tend to have more PAs. They argue that these areas enhance a country's international reputation and help protect incumbent foreign firms by raising entry barriers for potential competitors. As such, foreign firms may have an incentive to pressure host governments to respect PAs. Similarly, foreign donors may object to environmentally harmful practices or to the violation of domestic environmental laws. Given these dynamics, we might expect that in countries with greater exposure to international scrutiny—measured by higher levels of FDI and a greater share of GDP derived from official development assistance (ODA)—the influence of birth regions on the placement of Chinese aid projects in PAs should be weaker.

To assess these explanations, we interacted the birth region variable with a country's log FDI stock[14] and the share of ODA relative to the gross national income.[15] If the international pressure explanation applies, we should see a negative and statistically significant interaction coefficient. The results in column 1 and 2 of Table 3, however, do not align with that expectation. The coefficients are very close to zero, positive, and statistically insignificant. This suggests that international pressure is unlikely to influence leaders' decisions to place Chinese projects in PAs.

Another possible explanation is that leaders may be primarily motivated by a desire to promote development in their country and particularly in their home regions. If this were the case, we would expect leaders from relatively underdeveloped areas to be more willing to sacrifice environmental protection in favor of attracting Chinese aid projects. To test this, we interacted the birth region indicator with two measures of development: the log-transformed GDP per capita at the country level and the log of nighttime light intensity for ADM1 regions covered by a project. Columns 3 and 4 in Table 3 present the results of this test. If development concerns were driving the

[14]Following Garriga and Zhang (2025), we do not look at the annual FDI stock, but we take the rolling average mean across four years.

[15]FDI data comes from UNCTAD (2024) and the ODA share data was taken from the World Bank World Bank (2024).

Table 3: Testing Alternative Explanations

	(1)	(2)	(3)	(4)
Variables				
Birth Region	0.00329	0.00906	-0.03471	0.03227
	(0.18688)	(0.04627)	(0.29231)	(0.09617)
Num. ADM1 Regions	0.04022*	0.03976*	0.04058*	0.04023**
	(0.01588)	(0.01542)	(0.01588)	(0.01527)
Num. Mines	0.00139	0.00233	0.00167	0.00219
	(0.00211)	(0.00234)	(0.00210)	(0.00220)
Num. Oil/Gas	0.01188	0.01036	0.01276*	0.01002
	(0.00601)	(0.00578)	(0.00501)	(0.00525)
Log Population	0.03817*	0.03754*	0.03461*	0.03842*
	(0.01765)	(0.01624)	(0.01595)	(0.01595)
Log Total Area	0.02761	0.03033	0.03097	0.02975
	(0.01666)	(0.01553)	(0.01569)	(0.01532)
Num. PAs	0.00088*	0.00089*	0.00099**	0.00089*
	(0.00039)	(0.00039)	(0.00037)	(0.00037)
Log Night Time Ligts	-0.04833	-0.04356	-0.04472	-0.03998
	(0.03469)	(0.03219)	(0.03251)	(0.03150)
In Capital	0.04183	0.04520	0.04519	0.04506
	(0.04019)	(0.03972)	(0.03879)	(0.03845)
Birth Region × Log FDI Stock	0.00103			
	(0.01965)			
Birth Region × ODA/GNI (in %)		0.00002		
		(0.00369)		
Birth Region × Log GDP per Capita			0.00573	
			(0.03736)	
Birth Region × Log Night Time Lights				-0.01854
				(0.04508)
Fixed-effects				
Recipient-Year	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes
Fit statistics				
R^2	0.574	0.577	0.575	0.580
Observations	3,430	3,555	3,570	3,675

Clustered (Recipient) standard-errors in parentheses
*Signif. Codes: **: 0.01, *: 0.05*

pattern, we would expect the interaction terms to be negative, indicating a higher likelihood of PA encroachment in less developed regions. However, we find no statistically significant interaction effects. While the coefficient for the nighttime lights interaction points in the expected direction, it does not reach statistical significance at the 95% level.

8 Conclusion

Our findings raise several key implications for scholars of international relations and environmental politics. First, they further temper optimism about the efficacy of PAs. Although there is some evidence that PAs can improve local environmental outcomes (e.g., Andam et al., 2008; Brodie et al., 2023; Miranda et al., 2016), extant work points to political interference that prevents the optimal placement of PAs. Our work points to an additional obstacle to environmental protection: even optimally placed PAs may not be respected if the political incentives for violating them are strong. Nevertheless, PAs create an important focal point for environmental movements to mobilize around. A plausible expectation is that even more aid projects would encroach on environmentally sensitive areas in the absence of PAs.

Second, these findings underscore how political costs can deter leaders from violating PAs. Our exploratory analysis demonstrates how factors such as ethnic political voting and public opinion toward China can influence the costs leaders face when violating PAs, thereby incentivizing them to minimize such violations. These results suggest that stronger accountability mechanisms can help curb elite capture of aid projects that undermine environmental protection (e.g., Böhmelt and Bernauer, 2025). However, the findings from the Asian context highlight the importance of ensuring that accountability mechanisms also prevent leaders from encroaching on PAs outside their key constituencies.

This project highlights several avenues for future research. First, further research is needed to better understand regional differences in the effects of birth regions. Is our finding specific to PA violations, or does it extend to the broader distribution of Chinese aid? Investigating whether birth region favoritism influences aid allocation more generally could provide valuable insights into the political economy of foreign assistance.

Second, survey research on public opinion regarding PA violations could offer new insights into why leaders refrain from violating PAs in some areas while doing so in others. This approach could also help disentangle the historical legacies of PAs and their influence on public attitudes toward

conservation.

Third, future research might compare the practices of different donors. While we consider China a most likely case for PA violations and the World Bank a less likely case, we do not investigate why these donors take different approaches. It is possible that bilateral donors prioritize making foreign policy gains and are willing to sacrifice environmental protection. Donors may vary in their interest group environments; perhaps governments in states with large fossil fuel or manufacturing sectors face pressure to fund PA-violating projects, while governments that face large environmentalist interests face pressure to stop such projects.

Fourth, while we analyze the placement of aid projects in PAs, an important next step is to assess their environmental consequences. We assume that placing infrastructure projects, such as energy plants, within PAs has significant environmental impacts, but this remains an open empirical question. Future research should investigate the extent of these impacts, assessing whether aid projects within PAs lead to measurable environmental degradation or if certain mitigation strategies are effective in minimizing harm.

Our work demonstrates that international development efforts can interact with domestic political incentives to undermine environmental protection efforts. Crucially, this and other work in environmental politics points to a dire need to take domestic politics seriously in the implementation of environmental protection efforts. If, for example, recent efforts to mobilize billions of dollars in green finance are ignorant of the threat of political interference, they risk falling short of their important goals.

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Supplementary Material

A Full Results

Table A.1: Effect of Birth Region on PA Placement

Dependent Variable:	In PA							
Model:	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Variables								
Birth Region	0.170**	0.044	0.039	0.031	0.011	0.010	0.010	0.006
	(0.034)	(0.040)	(0.040)	(0.039)	(0.046)	(0.044)	(0.044)	(0.041)
Num. ADM1 Regions		0.070**	0.067**	0.063**	0.046**	0.041**	0.041**	0.041**
		(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.015)	(0.015)
Num. Mines			0.007*	0.007*	0.003	0.002	0.002	0.002
			(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Num. Oil/Gas				0.014*	0.009	0.010*	0.010*	0.010
				(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Log Population					0.040*	0.037*	0.043*	0.036*
					(0.016)	(0.016)	(0.017)	(0.016)
Log Total Area					0.043**	0.039**	0.030*	0.034*
					(0.009)	(0.008)	(0.014)	(0.015)
Num. PAs						0.001*	0.001*	0.001*
						(0.000)	(0.000)	(0.000)
Log Avg. Nighttime Light							-0.025	-0.032
							(0.030)	(0.032)
In Capital								0.043
								(0.038)
Fixed-effects								
Recipient-Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics								
R^2	0.470	0.558	0.561	0.563	0.579	0.582	0.582	0.583
Observations	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875

Clustered (Recipient) standard-errors in parentheses
*Signif. Codes: **: 0.01, *: 0.05*

Table A.2: Effect of Birth Region on PA Placement in Africa

Dependent Variable:	In PA							
Model:	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Variables								
Birth Region	0.214**	0.096*	0.095*	0.094*	0.096*	0.094*	0.101*	0.099*
	(0.038)	(0.038)	(0.039)	(0.036)	(0.043)	(0.042)	(0.041)	(0.039)
Num. ADM1 Regions		0.099**	0.096**	0.096**	0.074**	0.068**	0.072**	0.072**
		(0.010)	(0.011)	(0.010)	(0.010)	(0.013)	(0.014)	(0.014)
Num. Mines			0.002	0.002	0.000	0.000	0.000	0.000
			(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Num. Oil/Gas				0.000	0.008	0.010	0.008	0.008
				(0.017)	(0.020)	(0.018)	(0.018)	(0.017)
Log Population					0.030	0.030	0.045*	0.044**
					(0.017)	(0.018)	(0.018)	(0.016)
Log Total Area					0.036**	0.035**	-0.001	0.000
					(0.009)	(0.009)	(0.019)	(0.020)
Num. PAs						0.000	0.000	0.000
						(0.000)	(0.000)	(0.000)
Log Avg. Nighttime Light							-0.098*	-0.099*
							(0.044)	(0.045)
In Capital								0.007
								(0.047)
Fixed-effects								
Recipient-Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics								
R^2	0.457	0.591	0.591	0.591	0.603	0.604	0.607	0.607
Observations	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,850

Clustered (Recipient) standard-errors in parentheses
*Signif. Codes: **: 0.01, *: 0.05*

Table A.3: Effect of Birth Region on PA Placement Outside of Africa

Dependent Variable:	In PA							
Model:	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Variables								
Birth Region	0.103*	-0.030	-0.039	-0.057	-0.112*	-0.116*	-0.113*	-0.112*
	(0.048)	(0.059)	(0.059)	(0.056)	(0.054)	(0.053)	(0.052)	(0.052)
Num. ADM1 Regions		0.055**	0.053**	0.047**	0.035*	0.032*	0.032*	0.031*
		(0.016)	(0.016)	(0.015)	(0.014)	(0.015)	(0.014)	(0.014)
Num. Mines			0.008	0.006	0.003	0.003	0.003	0.003
			(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Num. Oil/Gas				0.022**	0.014*	0.014*	0.014*	0.013*
				(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Log Population					0.049*	0.045*	0.037	0.032
					(0.020)	(0.022)	(0.027)	(0.027)
Log Total Area					0.043**	0.040*	0.050*	0.052*
					(0.016)	(0.015)	(0.024)	(0.024)
Num. PAs						0.001	0.001	0.001
						(0.001)	(0.001)	(0.001)
Log Avg. Nighttime Light							0.025	0.020
							(0.044)	(0.044)
In Capital								0.034
								(0.038)
Fixed-effects								
Recipient-Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics								
R^2	0.498	0.562	0.565	0.574	0.588	0.589	0.589	0.590
Observations	2,025	2,025	2,025	2,025	2,025	2,025	2,025	2,025

Clustered (Recipient) standard-errors in parentheses
*Signif. Codes: **: 0.01, *: 0.05*

B Adjusting for Post-Treatment Bias

Assumptions

Studying the effect of race on use of force in police encounters, Knox et al. (2020) describe a procedure for estimation of the average treatment effect while conditioning on a post-treatment moderator (in their case, whether an encounter occurred at all). We adapt this procedure to our study, allowing us to bound the ATE of a leader's birth region on the placement of a Chinese project in a protected area (PA), conditional on a project being placed (which is itself a function of a leader's birth region). We formally describe the procedure in our context below.

Let the outcome Y_i be a dummy variable that takes value 1 if a project i is placed in a PA and 0 otherwise, the moderator M_i be a dummy that takes value 1 if a project is implemented and 0 otherwise, and D_i be a dummy that takes value 1 if the region is the birth region of a leader and 0 otherwise. We have four principal strata corresponding to four possible profiles of $M_i(d)$, which are described in Table B.1.[16] Definition of these principal strata allows to move to discussion of the four assumptions necessary for estimation of the $ATE_{M=1}$, or ATE of birth region among implemented projects.

	$M_i(0) = 0$	$M_i(0) = 1$
$M_i(1) = 0$	Never Implement	Implement if Not Birth Region
$M_i(1) = 1$	Implement if Birth Region	Always Implement

Table B.1: Mediator Value and Treatment Status

Assumption 1 (Project Observability) $Y_i(d, 0) = 0$ *for all* i *and for* $d \in \{0, 1\}$

This assumption states that unplaced (or unobserved) projects do not appear in PAs. Certainly, if we do not observe a project in our data, we will not observe that it is in a PA. This is thus centrally a question of data quality. It is possible that the data around Chinese projects is incomplete, which would violate this assumption. It is unlikely, however, that unobserved projects are likely to be the kinds of projects that end up in PAs. Projects in PAs are generally in infrastructure and other easily observable sectors, while unobserved projects should tend to be smaller and in less observable projects, such as consulting services for the government.

Assumption 2 (Mediator Monotonicity) $M_i(1) \geq M_i(0)$ *for all* i.

[16] See Figure 2 in Knox et al.

This assumption rules out the existence of one of our principal strata, *Implement if Not Birth Region*. Intuitively, it is unlikely that projects are implemented if and only if the region is not the leader's birth region; any projects that are implemented in control regions would also be implemented in the treatment region. This is consistent both with the intuition of aid as a political tool and with existing empirical work on the subject (Dreher, Fuchs, Hodler, et al., 2019).

Assumption 3 (Differential Underlying Project Traits) $E[Y_i(d,m) \mid D_i = d', M_i(1) = M_i(0) = 1, X_i = x] \geq E[Y_i(d,m) \mid D_i = d', M_i(1) > M_i(0), X_i = x]$

This assumption states that projects that are implemented regardless of the president's birth region are weakly more likely to be placed in PAs than those that are only implemented in the president's birth region. We believe this is a plausible assumption given that in our theoretical model, China does not choose to implement a project only in a birth region because it can be placed in a PA. PA placement is a secondary process following the implementation decision.

Assumption 4 (Treatment Ignorability)

1. *With respect to potential mediator* $M_i(d) \perp\!\!\!\perp D_i \mid X_i$.
2. *With respect to potential outcomes:* $Y_i(d,m) \perp\!\!\!\perp D_i \mid M_i(0) = m', M_i(1) = m'', X_i$.

This represents a standard assumption of empirical work, indicating that both the treatment (birth region) is as good as randomly assigned to both the mediator (4.1) and the potential outcomes, conditional on some covariate(s) X_i. This assumption necessitates the inclusion of covariates that affect both the likelihood that a region produces a president and the likelihood that a region receives aid projects (and whether those projects are in PAs). We justify a number of controls and includes them in our analyses.

Results

Knox et al. (2020) define the sharp bounds of the $ATE_{M=1}$ the following way.

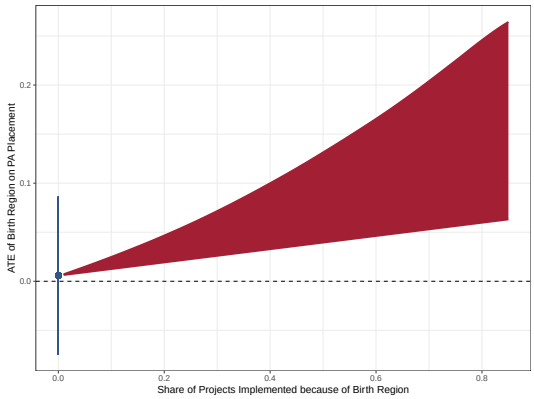
$$\mathbb{E}[\hat{\Delta}] + \rho\mathbb{E}[Y_i|D_1 = 0, M_i = 1](1 - \Pr(D_i = 0|M_i = 1)) \leq ATE_{M=1} \leq$$
$$\mathbb{E}[\hat{\Delta}] + \frac{\rho}{1-\rho}\left(\mathbb{E}[Y_i|D_1 = 1, M_i = 1] - \max\left\{0, 1 + \frac{1}{\rho}\mathbb{E}[Y_i|D_1 = 1, M_i = 1] - \frac{1}{\rho}\right\}\right) \times$$
$$\Pr(D_i = 0|M_i = 1) + \rho\mathbb{E}[Y_i|D_1 = 0, M_i = 1](1 - \Pr(D_i = 0|M_i = 1))$$

Note that $\hat{\Delta}$ refers to the "naive" estimator of the ATE under post-treatment bias defined as $\overline{Y_i|D_i = 1, M_i = 1} - \overline{Y_i|D_i = 0, M_i = 1}$. ρ refers to the share of projects that have only been implemented because they happen the leader's birth region.

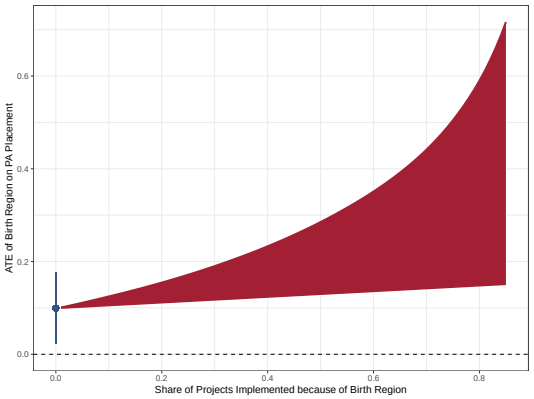
The ATE bounds for our projects are displayed in Figure B.1. The red shaded area represents the range of ATEs possible depending on the share of projects only happening because they are placed in the leader's birth region.

Figure B.1: ATE Bounds of birth region using Knox et al. (2020) method

(a) All



(b) Africa



(c) Outside Africa